

Health Impacts from CAFOs (confined animal feeding operations) and liquid manure application observed in Lenawee and Hillsdale County: Winter 2002 - January 2006. *

Rural Lenawee and Hillsdale counties, where 12 CAFOs, (Confined Animal Feeding Operations), are located, have a significant number of poor, elderly and immune impaired individuals. Children, the elderly and immune impaired individuals, who are neighbors of CAFOs, experience involuntary exposure to CAFO emissions such as hydrogen sulfide, ammonia, particulate matter and volatile organic compounds (VOCs).

The period of exposure is unpredictable however, both acute and chronic exposure to toxic/noxious fumes occurs in every month of the year for several days of each month. Exposure to CAFO emissions originates from the livestock facilities themselves *and* from the applications of liquid manure that are applied in large amounts on fields adjacent to neighbors' homes and farms.

A few of the reported and observed impacts are below:

Winter 2002

Week long hospitalization of a teenage boy, (17) from asthma attack following a winter application of liquid manure from a dairy CAFO on fields adjacent to his home in Prattville, MI. (Hillsdale Co.). Stench permeated home with doors and windows closed. Stench persisted many days on frozen fields.

April 2003

Mr. and Mrs. A, Beecher Rd. in Lenawee County, were both diagnosed with Chemical Encephalopathy from exposure to hydrogen sulfide from liquid manure. Diagnoses made by Kaye Kilburn MD. University of Southern California School of Medicine,

August 2003

Mrs. B lived close to a dairy CAFO, Beecher Rd. in Lenawee County. Mrs. B was newly diagnosed with lung cancer, (non smoker), home from hospital and on oxygen. She reported severe diarrhea and inability to breathe due to stench from recent land applications of liquid manure on fields near her home. Liquid manure remained several days on the surface of the field, unincorporated. Subsequent episodes of respiratory distress following liquid manure applications occurred over the following year. She contacted MDEQ (Michigan Department of Environmental Quality) calling the PEAS hotline. Her well tested positive for coliform. She was readmitted to the hospital for respiratory distress and diarrhea. Deceased 2004. Before she died, she reported many days of unbearable stench. The fumes from liquid manure applications increased her suffering and exacerbated her condition from family reports to neighbors.

August 13-21, 2003

A dairy CAFO in Lenawee County emptied out his liquid waste lagoon on area fields during very high temperatures and humidity - **a high heat index**, causing neighbors to become sick and experience distress. Many families in this neighborhood do not have air conditioning and had to close windows and doors. The waste stayed on area fields for several days, unincorporated until intervention by MDEQ after numerous complaints.

-During this period of exposure to liquid manure, Mrs. C experienced an acute episode of breathing difficulty and had to see her family doctor who diagnosed respiratory distress and documented decreased lung capacity from exposure to hydrogen sulfide fumes from liquid manure on fields adjacent to a field where she and her husband were working.

-Other neighbors of this dairy CAFO during this episode, reported headaches, cough, burning eyes, nausea, and diarrhea.

-An elderly couple left their home to get away from stench, dust and particulate in the air.

- A mother would not let her child outside.
- A man reported inability to leave his home and go to the back of his property due to stench.

August 13-21, 2003

-In Hillsdale County, during the same episode of high heat and humidity, another dairy CAFO applied liquid manure on area fields. This prompted residents of Lime Lake to call in odor complaints to MDEQ and close doors and windows. MDEQ investigated but no action was taken and there was no relief from fumes for several days. One resident reported that he smelled the liquid manure "50% of the time" throughout the year. Four long-time residents of this small lake community reported feelings of sadness, depression, anger at the recurring stench which is worse in mornings, evenings and at night when MDEQ is not present. They report their lives have altered since the construction of this large dairy CAFO ¼ mile uphill from their homes on Lime Lake in 2001.

Lime Lake residents expressed concern over repeated discharges of foul smelling, brown and green water into the inlet of Lime Lake. Water samples were taken by volunteers of ECCSCM, (Environmentally Concerned Citizens of South Central Michigan) from 2001-2003. Water samples taken at Lime Lake Inlets, showed 42 of 82 water samples violated Michigan's water quality standards for either *E.coli* or dissolved oxygen. (For more information see nocafos.org "water sampling data".)

August 31 – October, 2003

Neighbors of two dairy CAFOs in Lenawee County were exposed to fly outbreaks from unincorporated liquid manure applied daily for several days from both dairies. Reports of extreme odor and flies documented with fly traps and verified by MDEQ. MDEQ verbally noted the cause for flies may also have been dead cow parts not properly disposed of at one of the dairy CAFOs, and dead cow parts spread on area fields adjacent to farms and residences with children. One farm family had to leave a picnic on Labor Day due to flies and stench. A visiting family took children home due to fly and stench exposure. Families reported flies and stench continued until Oct.

I verified these conditions with several visits to the area and to the families.

October 31, 2003

Owner of a daycare center in Hillsdale County called MDEQ about strong odor affecting her daycare operation from neighboring dairy CAFO. She was concerned for children's health.

December 2, 2003

Mrs. C experienced another episode of respiratory distress, nose bleed, and headache from exposure to liquid manure spread by neighboring dairy CAFO in Lenawee County. She and her husband were outside all day harvesting corn. She sought medical help. Her physician documented further decrease in her lung capacity. Husband complained of headache, nose bleeds, and "loss of voice"

-Another neighbor of the same facility, Mr. B, complained of nausea when getting the mail. Mrs. B, using bottled oxygen and immune impaired from cancer, complained of stench, respiratory distress and expressed feelings of helplessness. The couple closed off the back part of their house where smell permeated through the back door.

-Mr. D, another neighbor, called in an odor complaint to MDEQ.

May – July 2004

Mr. and Mrs. E, an elderly couple and full time farmers for 50 years, contacted MDEQ in May and July 2004 with complaints of "stinks badly", "just terrible", and "nauseating" emissions from a newly expanded 8000 Swine CAFO. The swine CAFO sits very close to residences and ignored GAAMPs, (Generally Accepted Agricultural Practices) when building the facility close to neighbors earlier this

year. The elderly couple expressed distress many times to local and state officials and representatives and to vice president of ECCSCM.

October 2004

Mr. and Mrs. E in Lenawee County reported multiple complaints of “odors from swine farm” (Swine CAFO near Morenci). They described the odors as “very strong and affecting one’s health”, of “affecting their throats”. ECCSCM vice president obtained a hand held Hydrogen Sulfide meter (Draeger Micropac), and recorded readings of 6-8 ppm of H₂S (Hydrogen Sulfide) at the residence. Two days later, MDEQ AQD (Air Quality Division) staff personnel accompanied by his son arrived with a Jerome meter to take H₂S readings. Rain prevented use of the meter. He documented odor as “distinct and somewhat objectionable”. However, his 11 yr. son “stated the smell was starting to affect his asthma”. As DEQ staff drove around the swine facility and residences, his son needed to “take his inhaler” and they left the area. (DEQ Document AQD 10/20/04).

Hydrogen Sulfide Readings at Ridgeville Rd. and M156. taken by ECCSCM

10/4/04 7:36 am - 4ppm

10/12/04 7:44 - 6ppm

10/18/04 10:40am - 7ppm

10/19/04 5:09 pm - 3ppm

10/21/04 4:14pm - 6ppm

10/22/04 3:37 pm -7ppm

10/23/04 11:07am - 7ppm

10/23/04 11:08 am – 8ppm

10/24/04 9:07 am – 4ppm

Neighbors reported swine emissions strongest through the night and early morning, the cooler the air the heavier the odor. Residents reported stench on several days but the above days “they could not stand it”, they reported complaints of dizziness and severe headaches. ECCSCM volunteer who took H₂S readings also complained of headaches, sore throat and watering eyes in the brief period required to get a reading.

October 28, 04 MDEQ staff responded to a call from residents above living near swine CAFO. MDEQ reported readings of 3-5 ppb H₂S before batteries died and described the odors as “distinct and definite objectionable odor”

November 2004

Mr. E, elderly farmer, reported complaint against swine CAFO. Reported dizziness followed by headache. MDEQ staff noted variability in odor with shifts in breeze and location. After 30 minutes MDEQ staff noted odor was “distinct and objectionable” and left the area. (MDEQ AQD documents and verbal reports by resident to ECCSCM).

December 4, 2004

-In Lenawee County, a woman called ECCSCM vice president and MDEQ complaining of 4 days of stench from liquid manure spread thickly on fields near her property by the largest area dairy CAFO located in Hillsdale County but spreading in Lenawee. She said her 18 year old son “needs an aorta replacement” She said her children were sick and she had kept them home from school. She thought the sickness related to odor from liquid manure. She plans to sell her home and leave the area. I drove out to her home and verified the stench. Liquid manure application on these fields continued almost a week.

January – March 2005

10 complaints were reported to MDEQ Air Quality Staff by neighbors of a swine CAFO, north of Morenci in Lenawee County from January through March 2005. Residents, including an elderly couple and families with children reported: 'Smell from hogs very bad'. They described the air as "nauseating" and "Just terrible", reported an inability to go outside. On different occasions from January to March 2005, MDEQ staff had noted "septic like smells", "swine-like odors, which were distinct and definite swine/manure odor" (in front of a resident's home). "Ammonia-like odor"

In February, air complaints from Swine CAFO were verified by MDEQ staff who prepared a letter citing the CAFO of violation of the EPA Clean Air Act and MI Natural Resources and Environmental Act, Rule 901. The letter was never sent as MDA (Michigan Department of Agriculture) took over jurisdiction of air emissions by CAFOs. No action was taken by MDA no referrals made to MDEQ.

April 14-15 2005

Beecher Rd. Lenawee County

-4 individuals in 2 separate residences report physical and mental symptoms from proximity to multiple field applications of large volumes of liquid manure applied over a 2 week long period starting April 4, and 5 and culminating April 14-15. Strong winds from the north combined with abnormally dry weather and multiple dairy CAFOs in the area emptying untreated liquid manure waste lagoons on fields surrounding these individuals and other families produced many physical and mental symptoms to the emissions.

Upon interviewing Mr. and Mrs. C, I observed pallor, hoarseness; fatigue in Mrs. C.

She reported nausea, headache, respiratory distress, "burning sinus", watery eyes, inability to sleep and loss of appetite. Symptoms have persisted for the last 2 days at the time of the interview. She tried to see her family doctor who is away until Monday 4/18/05.

Mr. C reported "yesterday and today, tiredness, headache, nausea, gut ache, not hungry and can't sleep."

Mr. C's parents live ¼ miles away on Beecher Rd. Lenawee County. Mr. C stated his father, in his 80's and step mother, also elderly, have both been diagnosed with "Hydrogen Sulfide poisoning" by Dr. K. Kilburn (expert in occupational exposure) (See April 2003) above. During this episode on April 14-15 2005, his father (Mr. A), called the DEQ's PEAs hotline and complained of extreme odor affecting him and especially his wife. According to Mrs. C (daughter in law) her mother in law is suffering short term memory loss, disappears into bedroom for 2-3 hours at a time to get away from fumes and stench, reports headache, "feeling sore", has days when she can't comb her hair, is confused.

Mr. C (son) reports his father rarely discusses symptoms but had headaches.

In the last several days all 4 family members and neighbors have been exposed to noxious fumes from liquid manure applications on area fields from 4 facilities *at the same time*:

- Hartland, manure applications surround C's on 3 sides, north, south and east.
- Bakerlads, manure applications surround C's and neighbors from north, south and west.
- Flevo, 2 miles north spray irrigating with liquid manure in strong north winds 2 miles away.
- Stouterest, applying liquid manure to fields north 2 miles with strong north winds.

See *Area of Intense Exposure to CAFO Air Emissions from 2 dairy CAFOs April 1- 8, 2005 at the end of this document.*

Re: Hartland Farms, Mr. and Mrs. C counted 2 semi trucks passing by on dirt road (just north of them) every 30 minutes for 2- 10 hr. days.

Written complaints were filed with Lenawee County Health Department. Nobody responded.

April 11, 2005

In Hillsdale County, the week of 4/11/05, residents near Lime Lake attempted to contact PEAS hotline at MDEQ re: "choking" fumes" from the largest dairy CAFO who was spreading liquid manure on area fields. One resident was informed that MDEQ no longer took complaints unless referred by Michigan Department of Agriculture (MDA). Mr. F then contacted MDA and they stated that if the facility is following GAAMPS (Generally Accepted Agricultural Practices), they would do nothing. The GAAMPS are voluntary.

One woman from Lime Lake reported to me, that she called her doctor for sudden onset of sinus problems and "felt ill", she was concerned her illness was related to the emissions from liquid manure applications from the largest dairy CAFO.

April 25, 2005

In a phone conversation this afternoon with Dr. Leland Wolf, (a family practice MD), he reported an increased number of respiratory and sinus problems in those families living downwind from CAFOs. He also expressed "real concern about well water contamination" next to CAFOs. He has treated one case of Cryptosporidiasis in a child of a family that lives close to a dairy CAFO. The child had a positive stool sample. Dr. Wolf stated the local health department was not able to determine cause.

Dr. Wolf can be reached at:
9078 Railroad
Pittsford, MI 49271

May 25, 2005

"Severe stench" reported from several locations affecting reporting residents: Seneca and Plank Roads, Canandaigua and Ridgeville and Munson, Cadmus and Hughes. (Lenawee County)

June 2, 2005

East wind from hog CAFO on M156 causing "immediate eye irritation" windows have to be closed.

June 23, 2005

Hot day, wind "stench from emissions intense", Ingall Highway and Lime Creek Rd. (Lenawee County). Report from ECCSCM volunteer.

June 24, 2005

Residents downwind from Dairy CAFO report "extreme headache, sore throat, sinus burning, throat swelling and dizziness" from liquid manure being sprayed on hayfield at corner of Hughes and Cadmus. High heat index of 94. Temp 90F.

July 11-14, 2005

DEQ complaint history from re: hog CAFO "3 to 4 on odor scale causing burning sensation in nose" M156 north of Morenci in Lenawee County.

July 18, 2005

Residents on Henning Hwy. Hughes, Plank and Beecher Roads, (Lenawee County) cannot work outside. Heat index 100. Reports of "headache, sore throat, burning sinus", one resident described "Horrific Stench" from liquid manure being spread on wheat stubble by dairy CAFO.

August 4, 2005

Resident reported "horrendous emissions" on U.S. 127 from Broom Road to Squawfield Rd. High heat and humidity from liquid manure applications from largest dairy CAFO at numerous locations.

August 5, 2005

Resident, Mr. F. reported "unbearable" stench at Lime Lake, on Emery and Prattville Roads from dairy and/or pig CAFO. He was outside watering plants and had to go inside. He notified MDA per new MOU with DEQ and MDA. MDA refused to take complaint and referred him to DEQ.

August 8, 9, 2005

I was called by a resident on Beecher Rd. to observe and verify distress from liquid manure applications by dairy CAFO. I drove by homes and of those affected by stench from liquid manure. I got out of the car and stood for 3 minutes and began experiencing physical symptoms of nausea and lightheadedness. I could not stay in the area for more than a few moments. It was early evening, hot; no breeze with dust and particulate in the air I observed heavily applied liquid manure on fields of alfalfa, unincorporated. More liquid manure was applied on fields on Beecher, Cadmus, Hughes Highway and Plank Roads. Many residences were affected. There were children outside in the area, elderly, one man with Leukemia and I was told of 3 other elderly neighbors "with health problems". One resident had headache, "loss of voice".

August 27-October 2005

Complaints of severe odor to DEQ by residents across from hog CAFO on 156 north of Morenci, Lenawee County.

August 27 - DEQ reported - "strong, definite and distinct pig odor",

August 29 - DEQ reported - "strong, definite, and distinct, objectionable hog waste odor"

September 6 - DEQ reported - "very strong definite and distinct swine manure odor"

September 8 - DEQ reported - "strong, definite and distinct swine manure odor"

Mr. and Mrs. E live across the street from this hog CAFO that was built in the last 3 years. They have farmed for 50 years at this residence and are used to manure/livestock odor. Mr. and Mrs. E described the odor:

Mrs. E. "The smell is terrible, it stinks and many times about 11 at night it just seems to descend on us like a fog and there's no way you can avoid it, it just comes down. And also in the morning when it's foggy it just permeates the air and then of course there are days when the wind is just right that you cannot hardly stay outdoors. It's a very heavy smell ... I cough, I sneeze and I believe the headaches because I never had headaches before." "It's heavy, it's permeating and it plain stinks bad it just you can't get away from it and it also has sort of sickening smell, it isn't like the ordinary farm smells it's devastating and people don't want to come. ... I feel very betrayed by these people who put those 4000 hogs literally in my front yard. The smell from the hogs is devastating and you cannot get away from it it just will move right in on you. ... You have to keep the windows closed when it's real bad and the weather is hot we do not have air-conditioning. I feel betrayed and I am frustrated and devastated that such a thing would happen to a farm here where we came in and everything was about to fall apart. We restored the house the barns and the buildings and restored the school house that is on the national registrar... now with the smell from the hogs it has changed everything." Sometime it lasts days and sometimes it isn't at all but it is a very difficult thing to adjust too but you can't adjust to it, you can't get away from it."

Mr. E.: Sometimes when it's real bad I get headaches out of it which I never had before, "It's unpleasant to work outside ... which I'm out most of the time. Well it turns your attitude towards them very sour. Mr. E. describes the odor:" I can't describe the smell but it's sort of a sweet, nauseating smell

I mean it's... I can't describe it, it's just nauseating." [The stench is] "Murder... It's almost... My reaction is... it's very negative. I feel real frustrated about it."

Numerous air quality complaints from neighbors of above hog CAFO verified by DEQ.

October 10, 2005

Resident of Lime Lake reports "We are dying out here" when repeated applications of liquid manure from large dairy CAFO spread along U.S 127. Resident reports "light rain is falling, emissions are horrendous" (Hillsdale County)

October 27, 2005

Telephone call to ECCSCM volunteer nurse asking her to observe and verify complaints of "nauseating stench" all day long from heavy spreading of thickly applied, unincorporated liquid manure from bottom of lagoon on Camden Road and U.S. 127 from dairy CAFO. Wind blowing out of northwest, emissions surrounding a residence immediately south of the facility. Volunteer RN experienced nausea, and light-headedness and headache after standing outside car on road right-of-way for 5 minutes. Symptoms persisted for 40 minutes after leaving the scene. Another passenger experienced hoarseness.

October 27-October 31, 2005

Report from residents on Beecher Rd. (Lenawee). "Horrible emissions" from several locations from dairy CAFOs emptying lagoon on 5 different field locations along Beecher, Morey Highway, Cadmus. Neighbor reported "Children with headaches".

November 4, 5, 23, 25, December 4, 2005

Neighbors report to ECCSCM and DEQ numerous odor complaints from dairy CAFOs on Beecher in Lenawee, Dairy CAFO in Hillsdale on US 127, Hog CAFO on 156 north of Morenci.

January 16, 2006

Hog CAFO on 156 north of Morenci, cited by DEQ for air emissions after residents called DEQ hotline.

Summary:

During times of heavy, noxious emissions from area field applications of liquid manure from dairy and pig CAFOs there is no relief for residents. Liquid manure emissions occur every month of the year but are worse in spring, summer and fall. No agency is able to document exposure. MDEQ has been responsive in the past though unable to provide relief. The new MOU (Memorandum of Understanding) between MDA and MDEQ puts MDA as the agency to respond to air complaints for CAFOs. MDA has 7 days to respond to air emission complaints. Air emissions can last for hours, overnight or days. They can be strong, acute bursts of emissions or intermittent, chronic, long term emissions. When MDA arrives to evaluate the air, the emissions have almost always dissipated leaving residents suffering from involuntary exposure to components of CAFO air emissions but with no documentation to evaluate the exposure. The responsibility to evaluate these complaints is entrusted to an agency, MDA that has demonstrated unresponsiveness and hostility to local residents' complaints in the past, and has a vested interest in promoting this form of agricultural production. If the CAFO is following GAAMPS, (Generally Accepted Agricultural Practices), MDA told local residents that they will do nothing, not even file a complaint. As GAAMPS are voluntary, residents are faced with the futility of calling and reporting emissions and symptoms to MDA. MDA is not equipped to evaluate components of the emissions or symptoms of distress from residents impacted from these emissions.

A plan is needed to address the real public health impacts from emissions from CAFOs and the large volumes of liquid manure applications surrounding residences and farms. There is also a need to evaluate the effect of *multiple facilities spreading liquid manure simultaneously* in the same area greatly increasing exposure; the practice of spreading in high winds, high humidity and high heat, the practice of spray irrigating millions of gallons of untreated liquid waste into the air even on abnormally windy days, the practice of irrigating corn or other crops with liquid waste that is then fed back to cows and the practice of irrigating liquid CAFO waste over county drains (streams), polluting local water and downstream drinking water sources. The impacts from these common, observed practices by CAFOs must be considered on vulnerable populations, the elderly, children and the immune impaired. A plan is needed to adequately monitor exposures to hydrogen sulfide, ammonia and VOC's, particulate, pathogens and other components of liquid manure and CAFO facilities and to **prevent** such exposures and provide relief to rural residents.

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* This list of the impacts from CAFOs and CAFO liquid manure applications is not complete but are some of my direct observations or those reported to me or those detailed in MDEQ AQD documents.

**The names of individuals have been changed to letters of the alphabet to protect identities.